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Indiana Department of Education

Glenda Ritz, NBCT
Indiana Superintendent of Public Instruction

ISTEP+: Grade 4

Science

Parent Guide to ISTEP+ Scoring

Introduction

Indiana students in Grades 3-8 participated in the *ISTEP+* Spring 2014 administration. The test for *ISTEP+* in Spring 2014 consisted of an Applied Skills section administered in March and a Multiple-Choice section administered in late April and early May. For all grades, the Applied Skills section of the assessment was handscored by trained evaluators. The Multiple-Choice section was machine-scored. Scores for the Applied Skills and Multiple-Choice sections are combined to generate a student's total score.

Test results for both the Multiple-Choice and Applied Skills sections, as well as images of the Applied Skills student responses, are available online. It is the expectation of the Indiana Department of Education that schools will take this opportunity to have a conversation with parents and students about the results. As a springboard for this conversation, the Indiana Department of Education has created this document which outlines the released Applied Skills questions and includes brief scoring notes that describe the given score points and explain the scoring rules and expectations for the individual questions.

This document consists of:

- a brief description of the types of questions assessed
- a short summary of scoring rules utilized by the trained evaluators
- a copy of the released Applied Skills questions
- anchor papers used by evaluators to distinguish between rubric scores

NOTE: The Applied Skills operational questions are released at the end of each test administration. It is important to keep in mind that a significant portion of a student's score is calculated from the Multiple-Choice section of the assessment, which is not addressed within this document.

QUESTION TYPES

This document addresses the Applied Skills section of *ISTEP+*, which allows students to demonstrate their understanding of content in a variety of ways. The Applied Skills Assessment consists of constructed-response (CR) and extended-response (ER) questions. CR and ER questions are cognitively more demanding than multiple-choice (MC) questions. ER questions are typically more complex and will likely require more steps to respond.

SCORING

For the Applied Skills Assessment, each question is scored according to a rubric. Rubrics clearly define the requirements for each score point. Each student response is evaluated individually to determine whether it is acceptable. This allows student scores to be reported as accurately as possible. To ensure consistency when scoring the *ISTEP+* questions, CTB/McGraw-Hill works closely with assessment specialists at the Indiana Department of Education and teacher committees to set guidelines for scoring student responses. Committees look at several student papers and score them using the rubrics. Some of the student responses are selected as anchor papers and are used as clear examples of specific score points. Samples of anchor papers are presented within this document. Scoring supervisors then use anchor papers and approved, scored student responses to ensure that responses are evaluated appropriately and consistently. Individuals who evaluate and score *ISTEP+* student responses must have a four-year college degree and pass a series of qualifying tests on specific questions before they can evaluate any student responses.

If a response is unscorable, it is assigned one of the following condition codes:

A Blank/No Response/Refusal
B Illegible
C Written predominantly in a language other than English
D Insufficient response/Copied from text
E Response not related to test questions or scoring rule

Each CR question is scored according to its own rubric and has a maximum of 2 score points. The ER question is also scored according to its own rubric and has a maximum of 4 score points. For all Applied Skills questions, the maximum score point value is desired, but students can receive partial credit on questions. For example, it is possible for students to receive 1 point for a CR question or 1, 2, or 3 points for the ER question.

For some questions, students are expected to explain and justify their responses. Students' ability to communicate concepts is critical in understanding science and is emphasized in Indiana's Science Standards.

Additionally, students are not penalized for:

- spelling or grammar errors
- using abbreviations; for example, both *cm* and *centimeters* are acceptable

For additional information regarding *ISTEP+* or other student assessments, please contact the Indiana Department of Education by calling 317-232-9050 or writing via email: istep@doe.in.gov.

The chart below summarizes the question types used to measure a student's mastery of content, the assessment that contains the particular question type, the standards assessed in each assessment, and the scoring method used to evaluate a student's response given the question type.

Scoring Note: All student responses to questions found in each Applied Skills Assessment are handscored using the specific rubric(s) outlined in the column labeled "Scoring Method." As indicated in the chart, all multiple-choice questions are machine scored.

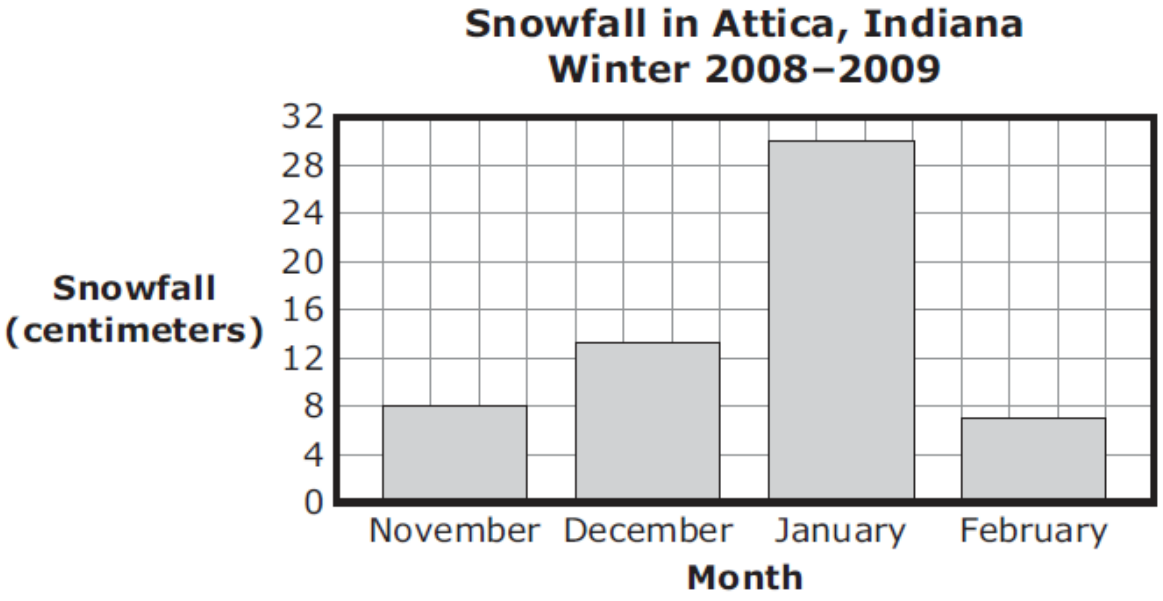
Question Type	Assessment	Standards Assessed	Scoring Method
Multiple-Choice	Multiple-Choice Assessment	All	Machine-Scored
Constructed-Response (CR)	Applied Skills Assessment	All	Analytic Rubric
Extended-Response (ER)	Applied Skills Assessment	All	Analytic Rubric

More information is available regarding these assessment topics on the Office of Student Assessment homepage at http://www.doe.in.gov/assessment.

Constructed-Response
Standard 5: The Nature of Science

Question 1

The graph below shows the amount of snowfall in Attica, Indiana, during four months of winter in 2008–2009.



Compare the amount of snowfall in December with the amount of snowfall in February.

Describe the trend in the amount of snowfall each month between November and February.

Key Element(s):

Any one of the following:

- Any response indicating that the amount of snowfall in February was less than that in December.
- Any response indicating that the amount of snowfall in December was greater than that in February.

- Any response indicating that the amount of snowfall was smallest in November, rose in December, rose again in January, and then became smaller in February.

Rubric:

2 points	Two key elements
1 point	One key element
0 points	Other

Question 2

A student would like to identify an unknown mineral. She knows this mineral is one of the minerals in Moh's Scale of Mineral Hardness, which is shown below.

Moh's Scale of Mineral Hardness

Hardness	Mineral
1	Talc
2	Gypsum
3	Calcite
4	Fluorite
5	Apatite
6	Orthoclase
7	Quartz
8	Topaz
9	Corundum
10	Diamond

The unknown mineral can scratch talc and calcite. Apatite can scratch the unknown mineral.

According to Moh's scale, what is the unknown mineral?

Answer _____

Using the names of minerals in Moh's scale, explain how you know what the unknown mineral is.

_____

_____

Key Element(s):

- Fluorite

- Any response indicating that because the unknown mineral can scratch calcite, it must be higher than calcite on Moh's scale, and because apatite can scratch the unknown mineral, it must be below apatite on Moh's scale. The only mineral between calcite and apatite is fluorite.

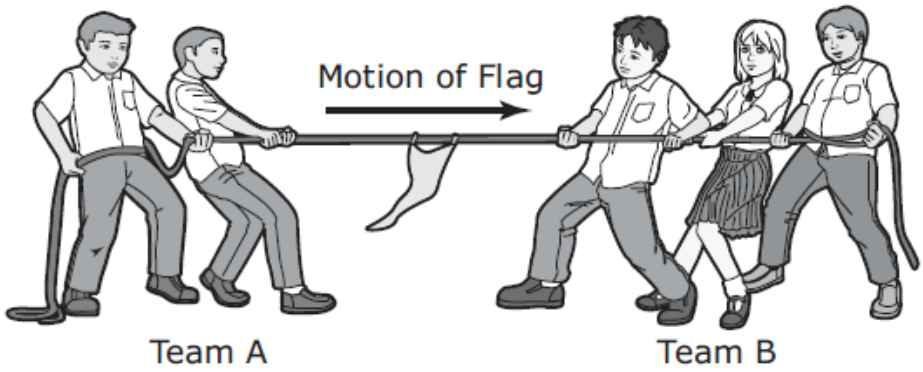
Rubric:

2 points	Two key elements
1 point	One key element
0 points	Other

Constructed-Response
Standard 4: Science, Engineering and Technology

Question 3

A group of students is playing tug-of-war. A flag is tied to the center of the rope. The diagram below shows the direction in which the flag is moving.



Describe how the speed of the flag will be affected if a fourth student pulls on the rope with Team B.

Explain why the flag will be affected in the way you described if a fourth student pulls on the rope with Team B. Be sure to use the word *force* in your explanation.

As the teams continue to pull on the rope, explain what each team would need to do to stop the motion of the flag. Be sure to use the word *force* in your explanation.

Key Element(s):

- Any response indicating that the speed of the flag will increase.
  AND
- Any response indicating that another student pulling with Team B will increase the force that Team B is exerting on the rope which will, in turn, increase the speed of the flag (as it moves to the right).

- Any response indicating that both teams would need to pull with the same amount of force (in opposing directions).

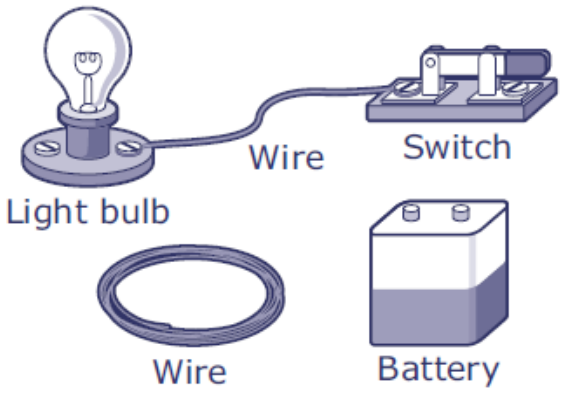
Rubric:

2 points	Two key elements
1 point	One key element
0 points	Other

Extended-Response
Standard 1: Physical Science

Question 4

The diagram below shows a light bulb, a switch, a battery, and some wire.



Using all the parts shown in the diagram, describe all the places where the wire must be added to make a complete circuit.

_____

_____

Another light bulb and wire are added to the circuit between the first light bulb and the switch.

Predict what change will happen to each light bulb after the second light bulb is added to the complete circuit.

First light bulb _____

_____

Second light bulb _____

_____

Key Element(s):

Both of the following (one key element each):

- Wire must be added between the switch and the battery/connecting the switch to the battery.
- Wire must be added between the battery and the light bulb/connecting the battery to the light bulb.

Both of the following (one key element each):

- Any response indicating that the newly added/second light bulb would be lit.
- Any response indicating that the first light bulb (and the second light bulb) would be dimmer/less bright than the first light bulb was before the second light bulb was added.

Rubric:

4 points	Four key elements
3 points	Three key elements
2 points	Two key elements
1 point	One key element
0 points	Other